



Tears of blood for the cracking city: Urban infrastructure of extraction and everyday life in Kiruna, Sweden

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ABSTRACT: Around the world, new cities established by industries have accompanied the production and extraction of natural resources. In company towns, employer-provided housing, public infrastructure, education, recreation, and social services not only improved the living conditions of workers, but also mediated social and political relations between companies and local communities. In this paper, I analyse Kiruna, an Arctic New Town established by the Swedish mining company LKAB in 1900, as an example of an ‘urban infrastructure’ that has long mediated relations between company and community. In 2004, however, LKAB announced mining deformations were gradually destroying urban Kiruna, initiating a mining-induced displacement and resettlement megaproject of six thousand residents, which LKAB and its owner, the Swedish government, call ‘Societal Transformation’. Based on anthropological fieldwork and interviews conducted in Kiruna between 2012 and 2023, I argue that residents’ embodied, everyday experiences of living with urban infrastructural ruination evidence a transformation in the relationship between company and community, as new spatial and material conditions, or ‘cracks’ for residents to question state and corporate claims about Societal Transformation emerge.

Keywords: Sweden, urban space, infrastructure, affect, mining-based displacement and resettlement

The senses sharpen on the surfaces of things taking form.
(Kathleen Stewart, *Atmospheric Attunements*, 2011)

In 2004, the Swedish state-owned mining company LKAB (Luossavaara-Kiirunavaara Aktiebolag) informed Kiruna Municipality that mining deformations from its operations were gradually destroying Kiruna¹, Sweden’s northernmost city. This irreversible cracking, sinking, and collapse of the earth would necessitate the displacement and resettlement of

¹ Northern Sami: *Giron*, Finnish: *Kiiruna*; Meänkieli, *Kieruna*. For the sake of clarity, in this article I will only use the Swedish name for the city and mine, Kiruna. However, as the city, mine, and infrastructure were built on the unceded lands of Giron’s Indigenous Sámi community and Finnish and Meänkieli-speaking national minorities, it is important to note this remains an ethnically, linguistically, and politically heterogenous homeland.

six thousand of the city's 18,000 residents² from the city centre, as well as the demolition of homes, businesses, schools, the fire station, hospital, and infrastructure damaged by mining deformations over a period of thirty years or more. This mining-induced displacement and resettlement (MIDR) megaproject is typically referred to by residents, Kiruna Municipality, and the Swedish public as Kiruna's 'urban transformation'³ (*stadsomvandling*), and 'societal transformation' (*sambällsomvandling*, hereafter Societal Transformation) by LKAB and its owner, the Swedish government (López 2021a, 2021b).

Since 2004, LKAB has represented 'Societal Transformation' in the Ore Fields as not only necessary for continued mining operations, but for ensuring continued community well-being and a 'common future'. For example, the first page of a company pamphlet titled *Future: LKAB's Societal Transformations in Kiruna and Malmberget* (LKAB 2016) reads:

"LKAB and the Ore Fields have a history of over 125 years. Iron ore and mining have laid the foundation for viable communities where many have realized their dreams of a good life ... Should LKAB continue to create prosperity by generating jobs, paying taxes and being an active player in communities, we must in the future mine the ore that lies under the ground where people live today. Successful societal transformation lays the foundation for successful mining operation and a common future at two of LKAB's locations, Kiruna and Malmberget."

In this article, I critically examine the residents' experiences of urban infrastructural change against state and corporate claims about the kind of change Societal Transformation entails. The city of Kiruna, I suggest, is an urban infrastructure which has long materialized and mediated social relations between LKAB and the community, including moral obligations, affective ties, and relations of trust. However, I argue that residents' embodied experiences and affective responses to living with urban ruination, rupture, and disconnection also evidence a growing political rift in this seemingly iron-clad relationship, as material breakdown produces new spatial conditions, or 'cracks' for residents to question state and corporate claims about Societal Transformation as necessary to ensure the future well-being of the community.

This article draws on multi-sited anthropological fieldwork, observations, and archival research conducted 2012–2015, and 2022–2023, on local histories, experiences, and responses to mining-based social and spatial change in Kiruna. Between 2012 and 2015, Kiruna was my home and primary field site, where I conducted fifty ethnographic, semi-structured interviews with city residents, company representatives, and other affected stakeholders (López 2021a). In 2022 and 2023, I conducted six weeks of fieldwork and additional interviews in Kiruna, both during and in the wake of the inauguration of the

² Kiruna is one of two communities founded by LKAB in the Ore Fields, Sweden's largest mining region. The Ore Fields (Malmfälten) is a region of over thirty-seven thousand square kilometers encompassing the municipalities of Kiruna, Gällivare, and Pajala. It is home to the largest iron mines in Europe – LKAB Kiruna and LKAB Malmberget – which together extract and produce 80 percent of Europe's iron ore. Today, both Kiruna and Malmberget, 120 kilometers south of Kiruna, are experiencing MIDR/Societal Transformation. In total, 10,000 residents will be displaced, and 5,000 homes plus 700,000 square meters of residential and commercial real estate will be affected in both cities.

³ In Swedish, *sambälle* (society) is both a social and spatial concept. The Swedish Academy's dictionary defines *sambälle* as both a country or state, "with an emphasis on common institutions, welfare, etc., i.e., Swedish society" and a place. *Sambällsomvandling* thus refers to the transformation of both spatial, social, and political structures in a given place.

New Kiruna resettlement area, three kilometres to the southwest of what is today known as Kiruna's 'Old Centre'.

My argument unfolds across six sections, beginning with a brief history of Societal Transformation in Kiruna and followed by a review of the theoretical framework informing my analysis of the empirical material. Moving into ethnography, the third section examines how Kiruna's history as an industrial company town has been used by LKAB to reinforce ideal company and community relations, and by affected residents to articulate critiques of Societal Transformation. In the fourth and fifth sections, I further trace how residents' embodied experiences and affective response to mining disturbance and infrastructural rupture itself created new spaces of question and critique, posing challenges to state and corporate claims about Societal Transformation. The sixth section summarizes the articles' main findings and offers a short concluding discussion on mining-induced displacement and resettlement and urban infrastructural change.

A Brief History of Kiruna's 'Societal Transformation'

On 16 March 2004, LKAB sent a letter to Kiruna's municipal council informing them that underground mining deformations⁴ were spreading toward the city of Kiruna and would damage inhabited areas and infrastructure in the coming decades. Accordingly, LKAB requested Kiruna Municipality to modify its municipal comprehensive plan⁵, thereby allowing the mine to expand into inhabited areas now known as the 'deformation zone' (López 2021a: 208). This request also entailed the planned demolition of approximately 3,000 homes, 1,000 workplaces, two schools, the city hospital, two highways, and national rail infrastructure over the next 30 years, and necessitate the resettlement of about 6,000 people, or 33 percent of urban Kiruna's population. The municipal council approved the revision of Kiruna's urban comprehensive plan in December 2004, and shortly thereafter began the search for a site to build the New Kiruna resettlement area. The final location for New Kiruna, three kilometres to the southwest of the existing centre (in another former mining area) was approved in 2011, after seven years of intensive debates between Kiruna Municipality and LKAB about where to build. Construction for New Kiruna broke ground in 2015, and New Kiruna was officially inaugurated in September 2022.

From a state finance perspective, 'Societal Transformation' is seen as "essential for LKAB's ability to maintain mining operations and contribute to employment, as well as for citizens' future opportunity for a good living environment and municipal services" (RiR 2017: 12). Accordingly, in 2008 LKAB's board approved the establishment of a new main level in the Kiruna mine, KIJ 1365. Although KIJ 1365 would extend the mine's productive 'life' until at least 2035 – and produce profits necessary for LKAB to compensate parties affected by mining deformations – it would also exacerbate the deformations destroying Kiruna. In 2012, LKAB announced that GPS-measurements revealed the deformations were spreading faster than expected, and according to new prognoses, residents needed to evacuate Kiruna's

⁴ Mining deformations in Kiruna are the result of underground mining conducted since the 1960s of the massive Kiruna ore body: eighty meters wide, four kilometers long, with a known depth of two kilometers and slanting at a sixty-degree angle towards the city.

⁵ In Sweden, municipalities are required to have a comprehensive plan that considers the entire area of the municipality, describes the present and intended use of land, water, the built environment, and how national interests, environmental regulations, and other public interests are to be protected.

city centre by 2023, a radically truncated timeline from previous estimates. Having secured land (purchased land from the state) for building the New Kiruna resettlement area the previous year, Kiruna Municipality held an architectural competition for the design of the New Kiruna city centre in the months following LKAB's surprise announcement. The winning design by the Swedish firm White Arkitekter was selected in 2013, and the construction of New Kiruna began in 2014, the same year the first compensation agreement⁶ between Kiruna Municipality and LKAB was signed, and the first residential area in the deformation zone – Ullspiran in the Company Neighbourhood – was evacuated. Since Ullspiran's demolition in 2014, evacuation and demolition of Kiruna's city centre has been ongoing. With the exception of 39 buildings designated as national cultural heritage that will be relocated to stable ground, all structures and infrastructure within the deformation zone will be demolished in phases until at least 2035, the year KUJ 1365 is estimated to cease its productive life. In light of this, all neighbourhoods, buildings, and infrastructure in 'Old Kiruna' mentioned in this article have, at the time of writing, either been demolished, evacuated, or await evacuation by the end of 2024.

Urban Infrastructure of Extraction and Everyday Life

This article builds on, and contributes to, the anthropology of resources, infrastructure, and industrial urban environments. My analysis is grounded in a theoretical understanding that 'resources' do not exist *a priori*, but emerge from specific ontological worlds, relations, assemblages, and practices; that is, the "matters, knowledges, infrastructures, and experiences that come together in the appreciation, extraction, processing, and consumption of natural resources" (Richardson and Weszkalnys 2014: 8). This approach facilitates an analysis of not only how resources become objects of value, knowledge, and substances and materials of possibility and potential (ibid. 18-19), but also how relational assemblages of humans and non-humans come together in the co-production of natural resources. Scholars attentive to the relational aspects of resource making have also called attention to a wide spectrum of affects and emotions – from promise, anticipation, excitement, euphoria, and hope (Nutall 2010; Ferguson 1999; Bjørst et. al. 2020; Thisted 2020) to doubt, disillusionment, worry, and fear (Weszkalnys 2016; Askland 2020; Lempinen and Lindroth 2021) – central to resource making. Although the 'emotional work' of resource extraction is often obscured (Sejersen and Thisted 2021: 373), emotions and affect are frequently mobilized for political, economic, and productive, ends in resource making (Weszkalnys 2016: 128).

Another aspect of resource making is the social production of spaces, natures, and environments amenable to capitalist extraction (Lefebvre 1991; Smith 2010; Tsing 2003). This includes new infrastructural arrangements and urban settlements to not only facilitate resource extraction and production, but to establish and sustain extractivist life worlds, affective ties, and relations over time and space (Ruiz 2021: 5, 25). Sweden is a country with an especially long history of producing industrial urban space; indeed, scholars believe one of the world's first industrial model towns⁷ or company towns, is Swedish (Ahlund and

⁶ The GP2, or Gruvstadspark 2 (Mine City Park 2) agreement was the first legal agreement between LKAB and Kiruna Municipality specifically regarding the development and construction of New Kiruna. Each 'phase' of Societal Transformation, linked to a specific area in the deformation zone, has its own agreement.

⁷ In British English, the term 'model town' is used to refer to what American English speakers would term a 'company town'. The Swedish term 'model city' or 'model town' (*mönsterstad*) is a translation of the British term.

Brunnström 1992). As I discuss in the following section, from the 19th century, a growing number of industrial and state actors in the European and Anglo-American world further embraced the company town model as a powerful technical means – together with the emerging disciplines of modern architecture and urban planning – to produce both new kinds of societies and economic goals (Porteous 1970; Gardner 1992; Crawford 1995).

Extractive industries thus create unique social and material formations – “places, people, and practices” (Ferry 2019: 9) – in sites and landscapes of production. In her study of a Bolivian tin mining town, for example, anthropologist Andrea Marston (2019: 15) observes that the “architecture of the mine is also the architecture of everyday life” as underground spatial and social orders carry over to life above ground, even for those without immediate ties to mining. Architectural theorists H el ene Frichot and Sepideh Karami (2022: 97) similarly observe that mining produces a form of urbanity “that reflects mirror image of the mine”: mines not only materially “feed the expansion of urbanity”, but also the expansion of physical and organizational infrastructure, and the development of knowledge and technologies for urbanization itself. In extractive resource sites, Frichot and Karami argue, architecture can thus be understood not only as a “spatial support system” for other infrastructure, but an infrastructure itself (Frichot and Karami 2022: 94; see also Frichot 2020). Apprehending architecture as an infrastructure, these authors argue – by what it “facilitates, or else, prohibits from passing” – helps both pinpoint material and political failure and social and political responses to failure in complex landscapes of extraction. Indeed, as anthropologists and scholars of Science and Technology Studies have long observed, infrastructural failures not only generate powerful embodied, affective, political responses (Knox 2017; Star and Ruhleder 1996; Larkin 2013; Appel, Anand, and Gupta 2018), but also affective histories, relations, engagements between people and materials that give infrastructural failure the power and capacity to “force thought” in new political directions (Knox 2017: 322). In this article, I therefore use the term ‘urban infrastructure’ to describe architectural-infrastructural assemblages at the urban scale, and with a collective capacity to mediate historical, social, and material relations.

In the following section, I turn to Kiruna’s founding as a model company town, where social and affective relations between the company and community were first materialized. As I will show, in the 2004 period, Kiruna’s history also became a critical site for both company and community to express their mutual expectations of Societal Transformation.

The Architecture of Paternalism

In summer, the slope below the red wooden Kiruna Church bursts with mountain birch, grass, and flowers, nearly obscuring a stone circle around a four-meter-high chunk of granite. This marks the resting place of Hjalmar Lundbohm (1855-1926), the first mine manager of LKAB and ‘founding father’ of the city of Kiruna. It is the sole grave located on the church grounds. The headstone’s relief carving portrays Lundbohm seated upon a boulder wearing a cape and holding his hat in his hands with a rifle between his knees, taking a rest while hunting in the mountains. The epitaph reads:

From
 Hjalmar Lundbohm
 Man of national virtue
 Friend of mankind
 Lover of beauty
 B. 1855 D. 1926

To
 The benefit of the motherland
 He laid bare
 The treasures of the mountain
 and founded the city

Kiruna's history as an industrial model town (*mönsterstad*) was something many residents I interviewed mentioned with pride. Kiruna-born historian and Lundbohm biographer Curt Persson (2015: 2) notes that positive associations between Lundbohm and the city are indeed widespread for many who grew up in Kiruna, closely aligned with the 'traditional image' of Lundbohm as a "confident leader who arranged everything for the good of his people" (ibid.). The last four lines of Lundbohm's epitaph are frequently quoted in texts about the mine director, whose reputation as an intrepid geologist, city founder, cultural ambassador, and patron of art and science remains strong today (Persson 2018). Though LKAB was established by a private consortium of Swedish and British financiers in 1890, under Lundbohm's leadership the company grew into a powerful northern actor, remaking Sweden's far north into an extractive resource frontier. Attracted by higher wages, from 1890 to 1910 5,000 industrial workers arrived to work in LKAB's Gällivare and Kiruna mines, increasing the population of the region by 54% (Myhr Jansson et al. 2015) and deeply impacting the area's existing inhabitants, Indigenous Sámi and Finnish-speaking agriculturalists (Persson 2013; López 2021a). Today, Kiruna is considered the 'capital city' of the Ore Fields⁸, as it is both Sweden's and the European Union's, most productive iron mining region.

Biographies of Lundbohm often note that the future mine director was inspired by company towns he visited as geologist and representative of the Swedish Geological Survey (Åström 1965; Ahlström 1966; Persson 2015). These included well-known company towns such as Pullman, Illinois, built by the Pullman Railway Car Company; Port Sunlight, England, built by the Lever Brothers (today, the company Unilever); and New Lanark, Scotland, built by mill owner and utopian socialist Robert Owen. In these industrial New Towns, companies adopted distinctly paternalistic roles toward their workforces, motivated not only by profit but what some industrialists interpreted as a moral duty to 'improve' (what this improvement consisted of varied) the living and social conditions of their workers (Garner 1992). The company built worker housing, infrastructure, schools, cultural centres, and recreational facilities thus not only transformed the material living conditions of these industrial workers, but also drew companies and communities into intimate relations of

⁸ Malmfälten (the Ore Fields) is a region of over thirty-seven thousand square kilometers spanning Sweden's three northernmost municipalities: Kiruna, Gällivare, and Pajala. The region is home to two of the largest iron mines in Europe, LKAB Kiruna and LKAB Malmberget, which together produce approximately eighty percent of the iron ore in Europe.

reciprocity and responsibility.

After the state allocated land for LKAB to build Kiruna in 1899, Lundbohm commissioned urban planner Per O. Hallman to design Kiruna's first urban plan, approved in 1900. Hallman's plan for Kiruna consisted of three areas: the 'municipal' service community area where shops and other services not provided by the company were located; the Swedish Railways (SJ) company area for employees of the state railways; and LKAB's own Company Neighbourhood (*Bolagsområdet*), located closest to the mine on the south shore of Lake Luossajärvi. The Company Neighbourhood – where Lundbohm himself resided – was Sweden's first Garden City neighbourhood⁹, and was reserved exclusively for LKAB employees. Developed separately from the adjacent service and railway communities, its residents enjoyed the highest standards of living in early Kiruna, unavailable to those who did not work for LKAB (Lundbohm 1910). Lundbohm also commissioned Gustaf Wickman to design domestic spaces for LKAB's workforce, producing architecturally unique 'bachelor housing' for unmarried male mine workers, brightly coloured 'Inkwell' houses for two to six families, and copper-roofed villas for mine administrators. As in Pullman, Lundbohm had a streetcar installed in the Company Neighbourhood, free for company employees and their families (non-employees could ride for a fee). True to its Garden City design, residents of the Company Neighbourhood also enjoyed access to green spaces, carefully maintained during the short Arctic summers by teams of children LKAB employed during school breaks, and landscaped with flowers grown in the company's green houses.

Yet in these formative years (1896-1922) Kiruna grew into a "divided and segregated town" (Sandström and Persson 2021: 190), as the adjacent 'service' community especially lacked comparable resources to develop the built environment (*ibid.*). This inequality was noted by residents early on and within the first two years of Kiruna's existence, many favoured adopting a form of local government and administration which would have required LKAB to pay local taxes (Persson 2015: 177). LKAB opposed this, however, and using the company's disproportionate voting power in local government as was legal in Sweden at the time (*ibid.*), in 1908 negotiated with the County Board to appoint an alternative form of local government and administration to ensure LKAB's tax exempt status: the so-called 'municipal community' (*municipalsamhälle*). In exchange, LKAB agreed to compensate the new Kiruna 'municipal community' through building and infrastructure projects. From 1908 through the 1920s, LKAB-financed construction outside the Company Neighbourhood included a city hospital, fire station, and water and sewage lines (Sandström and Persson 2021: 191).

As part of the agreement with the County Board, LKAB also 'offered' to build a church for the local parish. The red wooden Kiruna Church was an ambitious artistic and architectural project, designed by Gustaf Wickman and with decorative elements and ecumenical pieces by celebrated artists of the day, including sculptor Christian Eriksson and painter Prince Eugen, son of Sweden's King Oscar II. Further inscribing settler colonial visions of space and society into Kiruna's built environment (López 2021a), the Church's form is famously attributed to Lundbohm's directions that Wickman design the building

⁹ Gamla Enskede, Stockholm, also designed by Per O. Hallman, is considered by some to be Sweden's first Garden City neighborhood. However, Gamla Enskede's plan was not approved until 1907, seven years after Kiruna's.

to resemble traditional Sámi domestic architecture¹⁰ (Bedoire 1973). Construction of the church was completed in 1912, and ownership was formally transferred to Jukkasjärvi Parish the following year.

In LKAB's narratives about early Kiruna and its founding, the Church is frequently described as a 'gift' (*gåva*) from LKAB to the community. For example, a page on the company's website about relocating the Church, planned for 2024, reads:

The Kiruna Church is special in many ways. The Church is an ecclesiastical cultural monument and is protected by the Cultural Environment Act, so the question has never been whether it should be moved, but rather how. The bell tower was built in 1907 and the church itself was built between 1909-1912. It was a gift from LKAB to the congregation. (LKAB 2024)

The story of the church as a gift LKAB to the community also appeared in information brochures which the company began distributing to all homes in the Ore Fields in 2009, *LKAB Future*, as well as free pamphlets about Societal Transformation available at LKAB's information office in the lobby of the Kiruna People's House. However, these corporate materials never mentioned the Church's role in the agreement between the County Board and LKAB: an agreement which favoured the company's profits and continued influence over the city at the cost of a stronger local government as well as an improved municipal tax base.¹¹

This corporate foundational myth (Rajak 2011: 66) associated with one of Kiruna's most beloved architectural icons has long reinforced corporate paternalism as the ideal relation between LKAB and residents, the corporate 'donor' to a community of 'receivers'. Representing the Church as a 'gift', LKAB invokes the moral logic and economy of gift exchange (Mauss 1967; Rajak 2011), conjuring itself as a moral corporate actor engaged in social relations of obligations of mutual reciprocity. This corporate personhood (Rajak 2011, 2014) is further reinforced by the mythical figure of Hjalmar Lundbohm, who died in 1926. Through his will and vision, the story goes, the seemingly impossible was made possible: An Arctic Garden city, "the best city in the world".¹² That Lundbohm's grave is the only one on the church grounds is also notable. While all other Kiruna residents are buried in a cemetery east of the city centre, the Church, bearing the trace of the Director's own designing hand, functions as an extension of his memorial, a monument to a visionary industrial patron who founded Kiruna not only for LKAB's business and workforce, but for the benefit of the entire Swedish nation.

These corporate foundational myths and architectural histories reveal one way LKAB has manifested local power beyond the economic – through the ideological and monumental production of the past (Rajak 2011; Herzfeld 2000). Although LKAB became a state-owned company in 1957, historians Johan Sandström and Curt Persson (2021: 198) observe that practices of corporate paternalism from Lundbohm's time persist into the present. As it was in 1910, LKAB employees receive preferential housing and rental opportunities, a valuable benefit in a city whose chronic housing shortage, exacerbated by the mining industry (and

¹⁰ Either a *goabti* (peat hut) or *lávvu* (tent with wooden poles).

¹¹ Today, the income taxes of LKAB employees or subcontractors registered as permanent municipal residents are the only form of tax revenue Kiruna Municipality receives from LKAB's operations.

¹² An oft-quoted statement attributed to Lundbohm about his visions for the city of Kiruna.

multiple Societal Transformation construction/infrastructure projects), is so severe that hundreds of jobs in education, healthcare, and social services remain unfilled. As it has for many decades, LKAB also nurtures relations with the wider community through formal and informal corporate social responsibility (CSR) initiatives: sponsoring local events, educational scholarships, athletic sponsorships, and grants to local schools and clubs. Yet because LKAB is also responsible for financing most of New Kiruna's construction and co-financing numerous municipal projects related to Societal Transformation¹³, these often appear connected to LKAB's CSR practices (Sandström and Persson 2018: 198). As Kiruna residents knew well, however, LKAB has also paused, cancelled, or limited CSR initiatives during periods of economic uncertainty. In 2017, for example, LKAB announced it no longer intended to finance a new train station to replace the old, beloved Kiruna station – one of the first structures to be demolished – despite five years of promises to the community it would do so (López 2021a: 234). This corporate 'change of heart' following a downturn in the global minerals market underscored the fundamentally precarious and unequal nature of CSR practices and underlying neoliberal capitalist logic (Rajak 2011: 192). Nevertheless, LKAB's diverse CSR practices, both formal and informal, continually reinvent social relations of corporate paternalism and patronage by re-creating, though ultimately subverting, the "coercive bonds of 'the gift', inspiring deference and dependence on the part of the recipient, rather than autonomy and empowerment" (ibid.: 177).

Deference and dependence are not the only bonds established through CSR. As anthropologist Marina Welker (2014: 69) notes, CSR practices also "foster attached, entangled, and symbiotic perceptions" of company-community relations. Between 2015 and 2019, for example, vinyl banners mounted on construction fences – behind which the Company Neighbourhood and City Hall were being demolished – stretched for hundreds of meters along Hjalmar Lundbohm Road, one of the city's main thoroughfares. The banners bore slogans (written in both Swedish and English) emphasizing a symbiotic relationship between LKAB and community, such as "Mining and community side by side" (2015) and "Societal Transformation is progressing to ensure a future together" (2019). This messaging has continued in New Kiruna, as I observed on sign on a construction fence which read "Community and mine together" (2023).

The repetition and visibility of these corporate mantras, as well as emphasis on symbiotic terms like 'together' (*tillsammans*), at first glance, place the company and community in equal relation – as partners facing the challenge of MIDR and moving towards a brighter future together. Yet these slogans also communicate a subtler message: to be an inhabitant of Kiruna is to be in relation with LKAB, whether one works for the company or not. Beyond a relation of 'dependence' – a term often used to explain corporate-community relations in company towns – I contend there is rather an *impossibility of refusal* in Kiruna: it is impossible to refuse this corporate relationship either as a city or municipal resident (nearly all social services, schools, and shops are in Kiruna). Reinforced by geographic isolation and poor infrastructural connections characteristic of the far reaches of northern Sweden, this

¹³ At the time of writing, LKAB has paid Kiruna Municipality 5 billion SEK (approximately 476 million USD) in compensation for Societal Transformation, and an additional 2.5 billion SEK (223.2 million USD) for real estate. In 2024, LKAB agreed to pay out an additional 227 million SEK (21.1 million USD) for unforeseen costs associated with Societal Transformation, primarily for relocating water and sewage infrastructure, including district heating (Åsgård 2024).

impossibility of refusal – to refuse would mean severing place ties, i.e., leaving – evidences the extent to which LKAB’s power has been naturalized in this part of the country. Extractivism in the Ore Fields, to borrow Marcel Mauss’ (1967: i) term, is thus a *total social phenomenon*, simultaneously expressed in economic, political, legal, moral, cultural, and even religious institutions (recall the Church). Kiruna’s architectures and infrastructure, inseparable from these, are thus primary sites for continually mediating affects and emotions – promise, hope, obligation, trust, gratitude – associated with extractivism and its lifeworlds. Yet as I discuss in the following sections, the ongoing ruination of Kiruna’s urban infrastructure is also beginning to produce ‘cracks’ in the relationship between the company and community, which like mining deformations, are not so easily contained.

“Is This the Model City Part Two?”

Since 2004, numerous scholars have studied the views of the residents of Kiruna about Societal Transformation. Overall, these studies show that Kiruna residents are aware that their individual feelings and views with regard to Societal Transformation are politically significant (Nilsson 2010; Granås 2012; Boyd 2023), especially when communicated to outsiders. Prior to 2015 (i.e., the first major residential evacuation and demolition) for example, residents’ ambivalent responses to questions from scholars or media about their views on Societal Transformation were predominantly interpreted as acceptance, alienation, lack of interest, fatalism, or disempowerment (Granås 2012: 136; Nilsson 2010: 437, 441). However, sociologist Brynhild Granås (2012: 137) found that these interpretations also misrecognized residents’ personal and political obligations toward Kiruna. Granås argues one of the ways residents manage their ‘affective needs’ about Societal Transformation is by ‘re-directing’ fraught emotions through nostalgic narratives of Kiruna’s history as a model company town. In doing so, residents can embrace a range of complex and contradictory emotions – including pride, concern, anticipation, uncertainty, and objection – which arise from living in an industrially marked city like Kiruna, while also enacting political responsibility towards a place that is “in their hearts but still out of their hands” (Granås 2012: 136-37).

One example of how some residents (anonymously) ‘re-directed’, or mediated, fraught emotions about Societal Transformation through Kiruna’s urban space, appeared in a 2009 newspaper editorial signed by “Many Concerned Kiruna Residents” (NSD 2009):

In the so-called ‘urban transformation’ of Kiruna, the conversation has so far been about new sewage lines, moving the railway (without a station!) and creating a “Mine City Park.” Is this the model city part two?

Hjalmar Lundbohm would weep blood if he could see how his life’s work was being treated. What has happened?

LKAB has purchased the Hunter’s Regiment neighbourhood, buildings crack in the Sawyer’s Neighbourhood (by the Sports Hall), and now the new city won’t be built on the previously selected site at Luossavaara Mountain because of mining pollution and unclear soil conditions.

Uncertainty about the growing deformations and our future city centre is total!

Why don’t our elected politicians say no?

Why does Mine District Twelve¹⁴ not act?

Demand the state and LKAB invest some of the billions in profits, so that these do not end up in the road construction around Stockholm!

Do you not realize that it is your constituents, children, and elderly who will pay the bill with hollowed-out welfare, a ruined city brand, and a worsened future?

We unfortunately cannot wait for some new mine director to take responsibility for anything other than delivering maximum profits to Stockholm.

Conjuring the spectre of Hjalmar Lundbohm, the anonymous authors insisted the material ‘mistreatment’ of ‘his life’s work’ would cause the mine director “to weep blood” (*att gråta blod*): a Swedish expression denoting profound sadness, frustration, and helplessness. Invoking Lundbohm as the personification of the moral corporation (Rajak 2011: 2014), the authors list numerous buildings and infrastructure damaged by mining to pinpoint sites of material and political failure, calling out those they saw as responsible: LKAB, municipal politicians, industrial trade unions, the Swedish state, and ‘Stockholm’, representing the southern, metropolitan ‘core’ disproportionately consuming the resources of the northern ‘periphery’. The letter also expressed a pervasive uncertainty amongst residents about the future, with nearly half (five of eleven) sentences in the letter punctuated with question marks. Highlighting a euphemistic municipal slogan associated with Societal Transformation, ‘model city 2.0’ (*mönsterstad 2.0*), the authors flipped the slogan into a pointed question: how could what was happening to their city be considered an improvement, or continuation of the values and ideals materialized in Lundbohm’s company town?

While the editorial’s authors did not hold back their sharp critiques of Societal Transformation – it was anonymous, after all - residents I got to know from 2012 onward were also beginning to question what Societal Transformation entailed. Roger, a mine worker in his early 20s, was one Kiruna resident generally positive about ‘the city move’. He looked forward to a new city centre with more shops, restaurants, and entertainment. “When do you get an opportunity to start over and build the town like you wanted it?”, he said during an interview in 2012. Yet he admitted the lack of building was becoming an issue for some: “Just one building, and it would show that we are getting somewhere. Because now people are just thinking: ‘are we getting something new? Or are we just going to drop down [into the ground]?’”

Roger also noted there was a growing scepticism amongst his co-workers at LKAB about whether the company was accurately reporting the extent of the deformations. When I asked him to elaborate, he said there was a mismatch between the public deformation forecasts and what workers like himself observed:

The projections for the deformations, these lines which say where they will be this year, and that year [...] a lot of people, especially at work, say they don’t trust them as much. This is because a couple of years ago, there was a road that you had to take to get to work at LKAB, from the City Hall it was a straight line. Then they [LKAB] said, ‘we have to make a new road’, and they started to make a new road, that goes in a curve. They started to work on

¹⁴ Gruvtoivan, the Kiruna chapter of the national Swedish Industrial and Metalworkers Union, IF Metall.

that. And then one day there was a real stress to finish the road, and they were building and building and building, and when it was done, they closed the old road. Just like that, and then it was gone. The whole area. It seems like they hadn't calculated correctly or something.

Having observed the sudden disappearance of not only a road but an entire area of land to mining deformations, the incident caused Roger and his colleagues to question whether LKAB had technical control over the situation. "Many people thought: if they calculated that wrong, what's to say they won't do it next time?" he said. He continued:

So it's not that you have a *fear* [...] Like I'm thinking about this railroad from Kiruna to Gällivare. They have to [...] they are making a new one. And it's like, when will that be gone? It could be any minute, or months, or years. Do they really know what's going to happen?

Roger recalled an additional incident from three years prior (around 2009), when his father stayed overnight at his old apartment in the Kiruna city centre. Both noticed the apartment 'shook' more than usual from blasting that night, leading his father to say, "I was wondering if I was going to wake up in a hole or something!" During the time Roger lived in that apartment, vibrations from blasting conducted in the mine between 01:10 and 01:30 each morning grew so intense he began waking up in the middle of the night. "We are not afraid", Roger said again, "but do they [LKAB] really know?"

These embodied experiences of infrastructural and material rupture had not only generated powerful affective responses from Roger and those around him – doubt, uncertainty, trepidation – but also a proliferation of new questions. While we were all familiar with the deformation maps in issues of *LKAB Future* that arrived in our mailboxes, the maps provided no information about what the gradual destruction of the city by mining deformations would actually *feel* like. These incidents had literally and metaphorically shaken Roger; the possibility that road and rail infrastructure could disappear "any minute" was no longer out of the question – why not his very home? Roger's new questions and concerns were particularly salient given his job at LKAB specifically involved working with rail and road infrastructure; he was now doubly vulnerable to being affected by these invisible and seemingly unpredictable mining hazards. As anthropologists Dominic Boyer and Mark Vardy observed amongst Houston residents impacted by Hurricane Harvey in 2015, inhabitants of areas vulnerable to disaster constitute "affective publics", groups who experience slow catastrophe through "dual modes of intimacy and impersonality" (Boyer and Vardy 2021: 619). Roger clearly recognized the complex, impersonal reasons why 'Societal Transformation' was happening and existing technical mitigation efforts – LKAB is responsible both for monitoring and reporting the spread of deformations. However, he experienced this destructive force – as did all other residents – in an individual, private, and often intimate way.

In the next and final section, I continue tracing residents' ongoing material engagements (Knox 2017) with Kiruna's urban ruination and rupture a decade on. As I will show, residents' responses to New Kiruna's infrastructure indicate that many of their questions about the future remain unanswered, contributing to a growing sense of being 'displaced in place' (Askland 2018) as the future city they were promised, slowly begins to emerge.

Funeral for a Street

On 3 September 2022, I watched a colourful parade of motor vehicles wind through Kiruna's "Old Centre", as locals now call it, for the last time. The *Goodbye Cruise* (*Hejdå Raggen*) was a site-specific artwork by artist Lotta Lampa commissioned by the arts association Konstfrämjandet Norrbotten. Inspired by the cruising subculture (*raggarkultur*) popular throughout Sweden's rural countryside, Lampa invited Kiruna's car enthusiasts to participate in the *Goodbye Cruise* as "a farewell, a funeral ceremony, and a last hurrah" for Old Kiruna's 'cruising street' Association Street (*Föreningsgatan*), which would soon be closed to the public. Under a bright blue sky, the drivers gathered in the parking lot of the Kiruna People's House, revving their engines as they arrived. At the appointed time, the cruise began: out of the parking lot and up Hjalmar Lundbohm Road, down Mangi Street, Association Street, Mine Road, and through the Kiruna bus station. The drivers did a second loop, then a third. As I and a handful of other residents stood watching on a sidewalk lined with now-shuttered businesses, more cars joined in with each loop, and by the end included American muscle cars, hot rods, vintage Volvos, EPA-tractors¹⁵, everyday family sedans, mine work vehicles, and the Kiruna Airport's fire truck.

For Lampa, the event was not only an opportunity to celebrate a local tradition, but an artistic critique of the social and spatial changes that Societal Transformation portended:

The city's new centre, which is emerging three kilometres to the east, has, in common with many other contemporary city plans, been designed to benefit pedestrians over the car borne. A vital part of *ragg* culture is being removed, and how it can be adapted to a new urban environment still lacks clear answers. (Konstfrämjandet Norrbotten 2024)

While 'car-free' design has been a growing trend in urban planning since the 1980s (Bille and Schwabe 2023), for Kiruna's displaced residents, a car-free centre was a radical infrastructural break from their previous way of life. On that day, many questions remained about how a local tradition closely associated with the Old Kiruna street plan, would translate to new infrastructural arrangements. Yet there were clues, evident from the moment the cruise ended, and people began heading to New Kiruna's inauguration. The city bus I had been waiting for was packed to capacity, and after a painfully slow crawl through heavy traffic up Ore Road – New Kiruna's new two-lane thoroughfare – we finally arrived at the ceremony already underway. Later, it became evident that Ore Road's narrow design exacerbated frustrating traffic jams, as cars were unable to pass buses at the new bus stops or slow-moving heaving construction vehicles, much less a caravan of cruisers.

During my last visit to Kiruna in January 2023, I found the streets where I had watched the *Goodbye Cruise*, fenced off. Compelled by sub-zero temperatures, I stopped at one of the few buildings in the Old Centre still visibly in use. Inside, a member from one of Kiruna's cultural associations invited me in. Matti had been busy organizing a community event in Mine City Park, located across the road from the association's headquarters. Over coffee, he noted that streets in the Old Centre were disappearing faster now: a few days earlier, he had found his usual route between their building and the park blocked by heavy construction

¹⁵ A modified vehicle with a speed limit of 30 kilometers an hour. It is popular with teenagers, who can obtain licenses and drive EPA-tractors starting at the age of 15.

fencing. “From one day to the next”, he said. On top of other logistical challenges related to the event, he had now had to find an alternate, and slightly longer route, to move people and equipment between the two sites. When I asked what he thought of the New Kiruna city centre, Matti felt there had been a notable change in the way of ‘doing things’, recalling one experience a few months prior as an example. On the day in question, he had parked his car near the new City Hall as he unloaded equipment for an event his association co-organized with Kiruna Municipality. In the few minutes he was inside, a private parking enforcement officer came and gave him a ticket. Matti was incredulous. “I’d never gotten a ticket before! It was unheard of in Old Kiruna. It never even crossed my mind.” The parking ticket incident seemed to reinforce Matti’s dislike for, and alienation from, New Kiruna. Old Kiruna had been more informal and a ‘do it yourself’ kind of place, he recalled. According to Matti, “everyone knew each other” in Old Kiruna – a parking ticket wouldn’t have been necessary. New Kiruna’s streets couldn’t be more different: they were narrower, had no street parking, and were now patrolled by a private security company.

New Kiruna was also noticeably colder, Matti pointed out. Although New Kiruna’s architects and urban planners produced numerous wind and climate studies to address these very concerns, many found New Kiruna bitterly cold and windy. Indeed, in chance encounters with residents I knew in Stockholm since New Kiruna’s inauguration, New Kiruna’s chilliness was one of the main things people reported about the place. This thermal perception was so widespread, that a few weeks before my own visit in January 2023, a Swedish public television reporter decided to informally test residents’ claims of the new colder centre (Palomäki 2023). Filming his car’s digital thermometer, the reporter registered a difference of more than 10 degrees Celsius between the Old Centre (-12°C) and New Centre (-24°C). Residents he presented his findings to afterward were nonplussed, with one describing the New Kiruna as a “cold hole” (*köldbåt*), a place with an unusually cold climate.

Later, I recalled several conversations with residents a decade earlier, in which they had highlighted Hallman’s Street plan as something they liked and would miss about Kiruna. Hallman’s Garden City plan had not only been ideal for cruising and convenient parking: it also kept people warmer. Many knew Hallman had designed the gently curving streets without corners and layout of the buildings to reduce the cold mountain winds, and which further provided beautiful, elevated views of the subarctic mountain landscape beyond LKAB’s mine. Others, like a young woman I spoke to in 2014, appreciated the uniquely intimate and ‘cosy’ feeling of urban Kiruna, which she’d not found in other northern Swedish cities: “Kiruna is full of small cosy squares. I like that when you are going around the city, you turn left or right, and see ‘oh, this was a nice little space’. And it’s not big stuff – you just see something different wherever you turn”.

For residents, these thermal critiques of New Kiruna’s streets not only registered physical differences between Old and New Kiruna. They also registered a deeper transformation in urban Kiruna’s infrastructural capacity to mediate a familiar ‘atmosphere’, or ‘lived affect’ – a shift in the city’s “capacity to affect and be affected” (Stewart 2011: 452). This affective shift was evident in New Kiruna’s modern urban plan and its sharp, straight streets which chilled, rather than warmed them; the efficient, narrow plan that denied both the possibility of a slow, flashy cruise, and a meandering walk punctuated by small, cosy spaces; and the new presence of parking enforcement officers that ensured the streets remained car free, but generated an atmosphere of surveillance, misrecognition, and alienation. Indeed, another resident I knew

(who had also studied social sciences at university) commented during a conversation in September 2023, that Kiruna increasingly reminded him of what anthropologist Marc Augé (1995) termed a ‘non-place’: spaces designed to be experienced anonymously, temporarily, and in highly controlled ways. Despite LKAB’s claim that Societal Transformation would ensure ‘togetherness’, residents’ physical engagements with Kiruna’s changing infrastructure revealed something else: that the city was now also capable of mediating unsettling experiences of transience, anonymity, discomfort and disconnection.

Conclusion

In this article, I have argued that the city of Kiruna is an urban infrastructure that has long mediated relations between residents and the mining industry. The significance of this urban infrastructure was highlighted in the post-2004 period, when both LKAB and residents engaged urban history and space to legitimise and articulate critiques of Societal Transformation. This infrastructural perspective, as I have shown, offers a way of understanding both resource-making and urban spaces beyond the economic and technopolitical, highlighting the relational, affective, and political nature of assemblages of people and materials in resource producing areas. Residents’ experiences of Societal Transformation that I have briefly discussed here, further indicate the emergence of an experimental condition of mining-induced displacement and resettlement, that anthropologist Hedda Haugen Askland (2020, 2024) terms as *eritalgia*: “the distress endured in response to lived experiences of significant environmental change that distorts, disrupts or displaces an individual’s sense of a future self in place” (Askland 2024: 23). Yet residents’ embodied experiences and affective responses to urban infrastructural ruination, rupture, and disconnection, also challenge the LKAB and the Swedish state’s claims about Societal Transformation and the expansion of mining as necessary to ensure continued ‘prosperity’, ‘a common future’, and ‘good living environments’ based on extractivism. Accordingly, urban infrastructural change in the wake of Societal Transformation is generating new social and material conditions that I have termed ‘cracks’ here; spaces where emerging political questions and answers may be posed by different actors – from LKAB to individual residents – about how the “current situation came to be and from which a different future might be made” (ibid.: 378). The powerful infrastructural capacity of the city of Kiruna, to mediate relations between the mining industry and local residents, thus remains not only significant, but is also expanding under Societal Transformation – albeit in unexpected, uncontrollable, and often unspeakable ways.

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